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Jumping to Conclusions Bias and Attitudes Towards Body Image and Food

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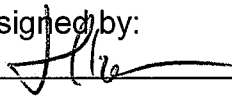
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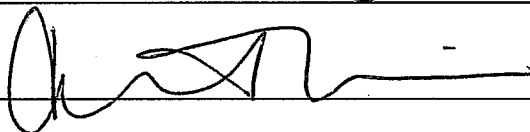
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Jumping to Conclusions Bias and Attitudes Towards Body Image and Food

A Thesis

Presented to the Department of Psychology

College of Liberal Arts and Sciences

and

The Honors Program

of

Butler University

In Partial Fulfillment

of the Requirements for Graduation Honors

Heather Anne Sperry

April 13, 2010

Background

Poor body image and eating disorders are highly prevalent in Western cultures. In the United States alone, 10 million women and 1 million men struggle with an eating disorder (National Eating Disorders Association, 2008). In addition to these individuals with DSM classified disorders, evidence has been found that over 80% of American women are unhappy with their appearance (National Eating Disorders Association, 2008). There is evidence to suggest that negative body image is one of the key factors in determining whether or not an individual has or will develop dysfunctional eating habits (Cash & Deagle, 1996). The other key factor is negative eating attitudes (Sabiston, 2009). Although these two factors often coincide (Fabian & Thompson, 2006), it is important to recognize that negative body image does not always have a clear relationship with negative eating attitudes (Koff & Sangani, 1996). For this reason, it is important to assess each factor individually. While it is clear that distorted body image and dysfunctional attitudes toward food are prevalent (National Eating Disorders Association, 2008), it is decidedly less clear what factors may predispose someone so highly to those dysfunctional attitudes that they may develop an eating disorder.

Recent research involving dysfunctional eating attitudes has begun to look critically at the development and maintenance of the negative thoughts that may underlie eating problems. For example, Steinglass et al. (2007) found that anorexic individuals may have such intense beliefs about weight, body image, and food that those beliefs could be classified as delusions. Given that delusions are strongly held but false beliefs about oneself that are maintained despite evidence to the contrary, this description may be appropriate for many common beliefs among those who suffer from eating disorders.

For example, women with eating disorders are often intensely preoccupied with how they appear to others (Smith, Simmons, Flory, Annus, & Hill, 2007). Further, minor eating events (e.g., eating a candy bar) caused women with eating disorders to judge their bodies to be significantly larger than did women without eating disorders (McKenzie, Williamson, & Cubic, 1993), suggesting that minor food stimuli may provoke fear of gaining weight and increased distortions of body image. If dysfunctional attitudes toward food and body image distortions can be considered part of the continuum of delusional thinking, it is reasonable to examine cognitive strategies that differ between individuals with delusions and healthy individuals. One such cognitive strategy is the Jumping to Conclusions (JTC) bias, which occurs when an individual comes to conclusions based on minimal evidence and confidently believes that these conclusions are accurate (McKay, Langdon, & Coltheart, 2006). Research has shown that delusional individuals make decisions based on significantly less information than healthy controls (e.g., Huq, Garety, & Hemsley, 1988), yet there is little research linking the jumping to conclusions bias to dysfunctional eating habits or negative body image.

The JTC bias has been traditionally accessed via a probabilistic reasoning task called the "beads task." Originally developed by Phillips & Edwards (1966), this task involved showing 2 jars of beads to a participant: one jar with 85 purple beads and 15 yellow beads and the other jar with 85 yellow beads and 15 purple beads. Beads were drawn one at a time, shown to the participant, and replaced in the jar. The participant could see as many beads as he or she wished in order to determine which jar was being used: the purple majority jar or the yellow majority jar. The number of stimuli requested

by the participant and the degree of confidence the participant had that he/she made the correct choice was assessed.

A variant of the beads task used in recent investigations (e.g., Dudley, John, Young & Over, 1997) was designed to assess the role of emotion on JTC. In the emotionally salient version of the beads task – the “survey task,” the participant is told two surveys were conducted about a person “very much like” the participant. One survey resulted in 85 positive comments and 15 negative comments, while the other survey resulted in 85 negative comments and 15 positive comments. Just like the beads task, the participant was asked to determine which survey was being referenced by seeing as many comments as he or she needed. Past research has shown that individuals who are prone to delusions are more likely to jump to conclusions on the survey task than non-delusion-prone individuals, and the tendency to jump to conclusions increases significantly when a negative word (e.g., “liar”) is presented as the first word an individual sees (Warman & Martin, 2006). It is clear that probabilistic reasoning tasks are affected by salient words, particularly when those words are negative. It is unclear, however, whether salient thoughts regarding body image and food increase the jumping to conclusions bias in individuals who have more dysfunctional attitudes toward body image and food.

Thesis Description

Since both negative body image and dysfunctional eating habits are key factors in the potential development of an eating disorder, it is important to understand how these dysfunctional attitudes toward food and body image manifest. If disordered eating is on the continuum of delusions, understanding JTC bias in individuals with dysfunctional

eating habits and a negative body image is important. The purpose of this study was to examine the continuum of attitudes toward food and weight and determine if there is a relationship to a jumping to conclusions decision making style. My hypothesis is that as beliefs about food and weight becoming increasingly distorted, jumping to conclusions will become increasingly evident.

Method

Participants

Following approval from the Honors board and the IRB, 100 participants were recruited from undergraduate Butler University classes. Each participant in the classroom sample was offered extra credit, with permission of his/her instructor. There were no restrictions on class, race, or gender, but participants had to be at least 18 years old in order to give informed consent.

Materials

Beads and surveys tasks. The dependent variables were assessed using three different probabilistic reasoning tasks: the beads task, a body image survey task, and a food survey task. The beads task (Appendix A) was used as described previously, but was adapted to be shown on a computer screen (see Warman & Martin, 2006). In accordance with Warman's (2008) procedure, participants designated how confident they were that a particular bead was coming from a specified jar – the jar with the 60 red beads and the 40 blue beads, or the jar with the 60 blue beads and 40 red beads. Once the participants were confident that they know which jar was being used, they indicated their choice. The

number of beads requested was recorded and became one of the six measures of jumping to conclusions. In addition, participants reported their percent confidence that they were correct in their decision. This confidence rating was another of the six JTC measures.

The salience of body image and food was assessed through two survey tasks: a body image task and a food task. Both were similar to the beads task. Following completion of the beads task, each participant engaged in the body image task (Appendix B) where he/she was asked to decide from which of 2 surveys about a person "just like" the participant words were being sampled. The first task made body image salient and proceeded the same way as the beads task, with 'fat' words replacing the blue beads and 'thin' words replacing the red beads; the same ratios and orders as used in the beads task were used in this survey task. The number of words requested and the percent confidence the participant had in his/her decision were recorded and became two more of the six JTC measures.

Participants completed the food task (Appendix C), which was similar to the body image task. This task consisted of "junk foods" and tools, a neutral category. The task began when the experimenter explained that words would be coming from a survey with 60 food words and 40 tool words or a survey with 60 tool words and 40 food words. The words ostensibly all came from the same survey and the participant was asked to determine from which survey he/she thought the words were coming. In reality, the word order was predetermined. The rest of the task remained the same with the food words substituting for red beads and the tool words substituting for blue beads. Again the number of words requested and the percent confidence the participant had in his/her decision were recorded and became the final two of the six JTC measures.

In summary, the present study used six measures of jumping to conclusions as the dependent variables. These six dependent variables were operationalized as the number of stimuli requested for the beads, food, and body image tasks and the percent confidence rating for all three tasks.

Goldfarb Fear of Fat Scale (GFFS; Goldfarb, Dykens, & Gerrard, 1985). The GFFS is a 10 item scale that measures the amount of fear one has of becoming fat, and it is being used as one of the primary independent variables in the present study. Participants rate themselves on a scale of 1 to 4 (1=Very untrue – 4=Very true); statements include “I am afraid to gain even a little weight” and “Becoming fat would be the worst thing that could happen to me”. The numbers are summed over all 10 statements and the scores on this survey range from 10 – 40. In the original validation sample, the GFFS demonstrated strong internal consistency reliability (Cronbach’s $\alpha = .85$), excellent stability (test-retest correlation of .88), and robust concurrent validity data (Goldfarb et al., 1985). In the present sample, reliability was similarly strong, $\alpha = .844$.

Eating Attitudes Test (EAT; Garner & Garfinkel, 1979). The EAT is a 40 item survey and is the second of the primary independent variables in the present study. For each statement, participants indicate whether the statement is common or rare for them on a scale of 1 through 6 (1=Always – 6=Never). Statements on the EAT include “Like eating with other people” and “Think about burning my calories when I exercise”. Responses are summed with scores ranging from 40-240. The original validation sample for this scale demonstrated excellent internal consistency ($\alpha = .94$; Garner & Garfinkel, 1979). In the present sample, reliability was lower but still strong, $\alpha = .828$.

Demographic Questionnaire. Participants were asked to fill out a demographic questionnaire about age, race, gender, and psychiatric history.

Design and Procedure

Each participant completed the experimental procedures in a one-on-one session with a research assistant. After providing informed consent (Appendix D), each participant completed the beads task. Then the participant completed the body image task followed by the food task. After this the GFFS (Appendix E) and EAT (Appendix F) were completed. Lastly, the participant completed the demographic questionnaire (Appendix G). Participants were thanked for their time and were free to leave. This study took each participant approximately 45 minutes to complete.

Results

Demographics and preliminary analysis

The sample of 100 participants was predominately female (80%), white (89%), and of traditional college age ($M=20.12$, $s.d.=2.44$). Twenty participants reported previous or current psychological diagnoses; only 1 participant reported a diagnosis of an eating disorder. These sample statistics were generally representative of the student population from which they were drawn. More detailed participant characteristics are displayed in Table 1.

To determine if any of the demographic variables affected the independent or dependent variables, a series of chi square, t-test, or correlation analyses was conducted as appropriate. There were no effects for any demographic variables on any of the dependent variables (all p 's $> .06$), nor was there any effect on the independent variables

of age, race or having a diagnosed psychological disorder (all p 's $> .19$). Further, no gender difference was found on the GFFS ($t(98) = -.546, p = .59$). There was, however, a significant gender effect on the EAT ($t(65.44) = -4.176, p < .001$), with females ($M = 14.42, sd = 8.52$) scoring significantly higher than males ($M = 9.25, sd = 3.13$). Since gender differences in this sample were expected, and because gender did not affect the dependent variables, it will not be considered further.

Due to the large number of dependent variables, multivariate procedures will be helpful in understanding any effects discovered. Therefore, to aid interpretation, the EAT and GFFS were both dichotomized via median split. The resulting variables were not significantly related to any of the demographic variables (all p 's $> .15$).

The effect of food attitude and body image on jumping to conclusions

To examine the main experimental hypothesis, that individuals with more dysfunctional attitudes toward food and weight would be more likely to jump to conclusions, I conducted a MANOVA where the dichotomized GFFS and EAT were entered as independent variables and the six Jumping to Conclusions measures were the dependent variables (number of stimuli requested – beads, weight words, and food words – and confidence in decision on each of these stimuli). While the omnibus MANOVA did not reveal significant main effects for the GFFS ($F(6, 80) = .665, p = .678$, partial $\eta^2 = .047$) or the EAT ($F(6, 80) = .471, p = .828$, partial $\eta^2 = .034$), the interaction between the two approached significance ($F(6, 80) = 2.005, p = .075$, partial $\eta^2 = .131$). A closer examination of the individual dependent variables revealed a significant interaction for the number of weight words requested ($F(1, 85) = 4.177, p = .044$, partial $\eta^2 = .047$), as well as a trend in the number of food words requested ($F(1, 85) = 2.385, p = .126$, partial

$\eta^2 = .027$). Figure 1 displays these results. While attenuations of statistical power limited follow-up analyses from reaching significance, the simple main effects indicated that individuals who had low GFFS scores and higher EAT scores were more likely to jump to conclusions on the food task and the body image task than were individuals with any other configuration (excepting the weight survey, where participants with low GFFS and higher EAT scores were not different from those with hi GFFS and low EAT). In other words, individuals who had *less* dysfunctional body images coupled with more dysfunctional beliefs about food were *more* likely to jump to conclusions on both of the emotionally salient tasks.

Discussion

The purpose of this study was to determine if there was a relationship between the jumping to conclusions bias and dysfunctional attitudes toward food and body image. To examine the possibility, the Goldfarb Fear of Fat Scale was used to assess beliefs about body image and the Eating Attitudes Test was used to assess eating habits and attitudes. The scores of these two questionnaires each served as independent variables. In addition, there were six dependent variables: the slide the participant ended on during the beads task, the salient food task and the salient body image task, and the per cent confidence for all three of these tasks. The six dependent variables measured jumping to conclusions and were compared to the two questionnaires to address the hypothesis: individuals with more dysfunctional attitudes toward food and weight would be more likely to jump to conclusions. I found no effect for the beads task or for any of the confidence measures. Participants who differed on fear of fat and attitudes toward food did, however, differ to

the degree to which they jumped to conclusions on the body image word task and the food word task. The direction of that difference was counter to both expectation and intuition.

The main research hypothesis was not supported. There was a marginal relationship between dysfunctional eating attitudes, as measured by the EAT, fear of becoming fat, as measured by the GFFS, and the jumping to conclusions reasoning style. This relationship, however, was far from straightforward: more dysfunctional attitudes toward food were found to be related to JTC only when coupled with a lower fear of being fat (see Figure 1). Although this effect could have occurred by chance, it is counterintuitive and therefore very interesting. Previous research has pointed to a positive correlation between dysfunctional eating attitudes and a fear of becoming fat, which means that as dysfunctional eating attitudes increases, so should the fear of becoming fat. It has been recognized that in many anorexic patients the fear of becoming fat is key to developing a pattern of food refusal (Katzman & Lee, 1997). However, other recent cross-cultural research has shown that dysfunctional eating attitudes and behaviors are not always linked to a fear of becoming fat. Rather, what has been considered prevailing knowledge may not be accurate. A study by Lee et al. (1993) studied 70 anorexic patients, 58.6% of whom did not show signs of a fat phobia. Because this study took place in a different country (Hong Kong), its generalizability to American culture is unclear; it may be that the phenomenon of eating disorders is identifiably different in different cultures, and that Chinese anorexia is differently motivated than American anorexia. Regardless, Lee et al.'s result suggests that the conventional wisdom surrounding the relationship between dysfunctional eating attitudes and fear of becoming

fat may not always be correct. In fact, the counterintuitive results found in the present study may not be so surprising after all.

An alternative way of explaining the counterintuitive relationship between eating attitudes and fear of becoming fat may be self-presentation bias, coupled with the differential "transparency" of the instruments used to assess those constructs. Examining the GFFS (Appendix E) and EAT (Appendix F), it is apparent that it is much easier to discern the purpose of the GFFS. Since some participants may be motivated to present themselves as healthy, it is reasonable that these participants are more able to manage their impressions on the face valid instrument and less able on the less transparent instrument. So, if a person "truly" has dysfunctional attitudes toward food (as evidenced by a comparatively higher score on the EAT) and that person is motivated to appear more healthy than she is (as evidenced by comparatively low scores on the GFFS), then that person may JTC on emotionally salient tasks. If a person displays any other configuration of food attitudes and fear of fat, that person tends not to JTC.

Although the GFFS had a good range of scores that were similar to national averages, one limitation of this study is a poor range on the EAT. Scores on the EAT range from 0-120, but for this study only scores from 1-39 were recorded from participants. Further, the mean of the present sample (13.55) was noticeably lower than the mean obtained in a random sample of college students (18.33; Goldfarb et. al, 1985). This restricted range did not allow for an inclusive look at individuals with higher levels of dysfunctional eating attitudes and habits. This may also coincide with the low incidence of reported eating disorders. Typically, approximately 4% of the participants in any given sample report a lifetime history of or current eating disorder (Hudson, Hiripi,

Pope, & Kessler, 2008); in a white, upper-middle class sample such as the present study's, an even higher prevalence of eating disorders should be observed. Possible reasons for the differences between the sample and the population may be due to underreporting eating disorders, undiagnosed eating disorders, a sample that is not fully representative, or a sample that simply does not have the same prevalence rates as the population. A better range on the EAT may have helped explain the relationship between it and the GFFS. Another limitation to this study is that the independent variables were dichotomized using a median split. While this dichotomization was done to allow for a clearer interpretation of the multiple dependent variables, such artificial dichotomization is not recommended because it results in the loss of information and power (MacCallum, Zhang, Preacher, & Rucker, 2002). Perhaps in the future, when more adequate sample sizes can be obtained, more sophisticated multivariate analyses (such as canonical correlation analysis) may be feasible and may shed more light on the present counterintuitive findings.

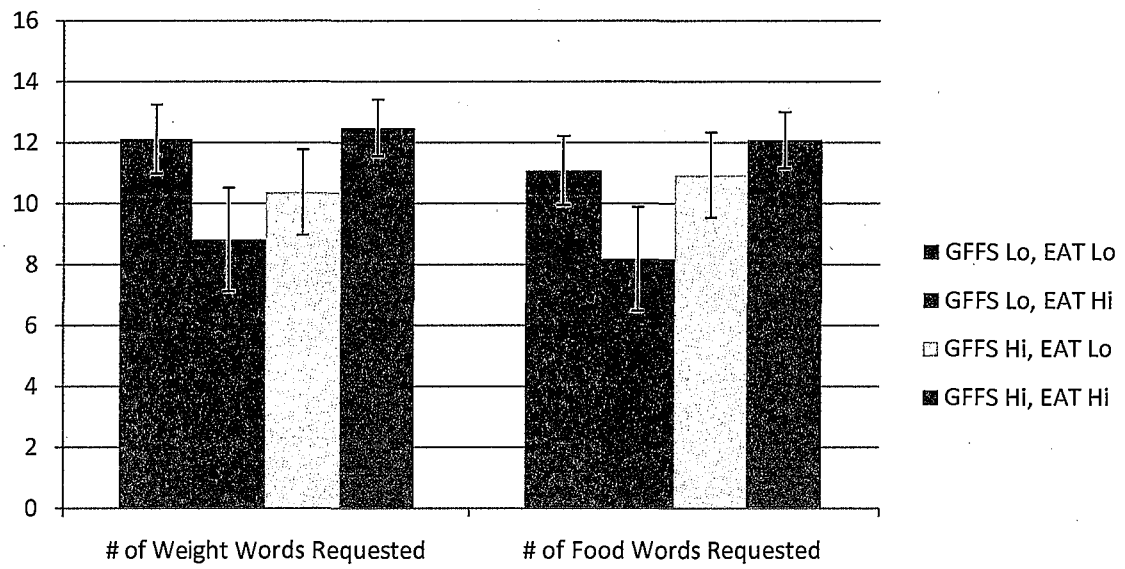
In conclusion, JTC does not increase as dysfunctional attitudes and fear of fat increase. Although counterintuitive, JTC increases as dysfunctional attitudes toward food increase and as the fear of becoming fat decreases. More research needs to be done on this interesting relationship to determine if the prevailing belief about fear of fat and dysfunctional eating attitudes is correct or if clinicians and researchers need to reframe the way they think about the development of eating disorders.

Table 1. Participant Characteristics

Gender	N (100)	Race	N (100)		
Male	20	White	89		
Female	80	Asian	5		
		Hispanic/Latino	4		
		Other	2		
		Mean (S.D)	Median	Min	Max
Age (N=100)		20.12 (2.44)	20	18	37
EAT (N=95)		13.55 (8.10)	11	3	39
GFFS (N=100)		18.34 (5.38)	17	10	33
Number beads requested (N=98)		12.97 (4.79)	12	4	20
Confidence – Beads (N=99)		71.42 (14.69)	75	30	100
Number body image words requested (N=99)		11.63 (5.72)	10	3	20
Confidence – Body (N=100)		77.91 (14.24)	80	25	100
Number food words requested (N=96)		10.94 (5.46)	8.5	1	20
Confidence – Food (N=100)		83.20 (10.85)	85	45	100

Note: EAT = Eating Attitudes Test; GFFS = Goldfarb Fear of Fat Scale. Five participants did not complete the entire EAT; missing data for remaining variables due to coding errors.

Figure 1: Interaction between dysfunctional attitudes toward food and weight on Jumping to Conclusions



NOTE: Lower scores indicate more JTC

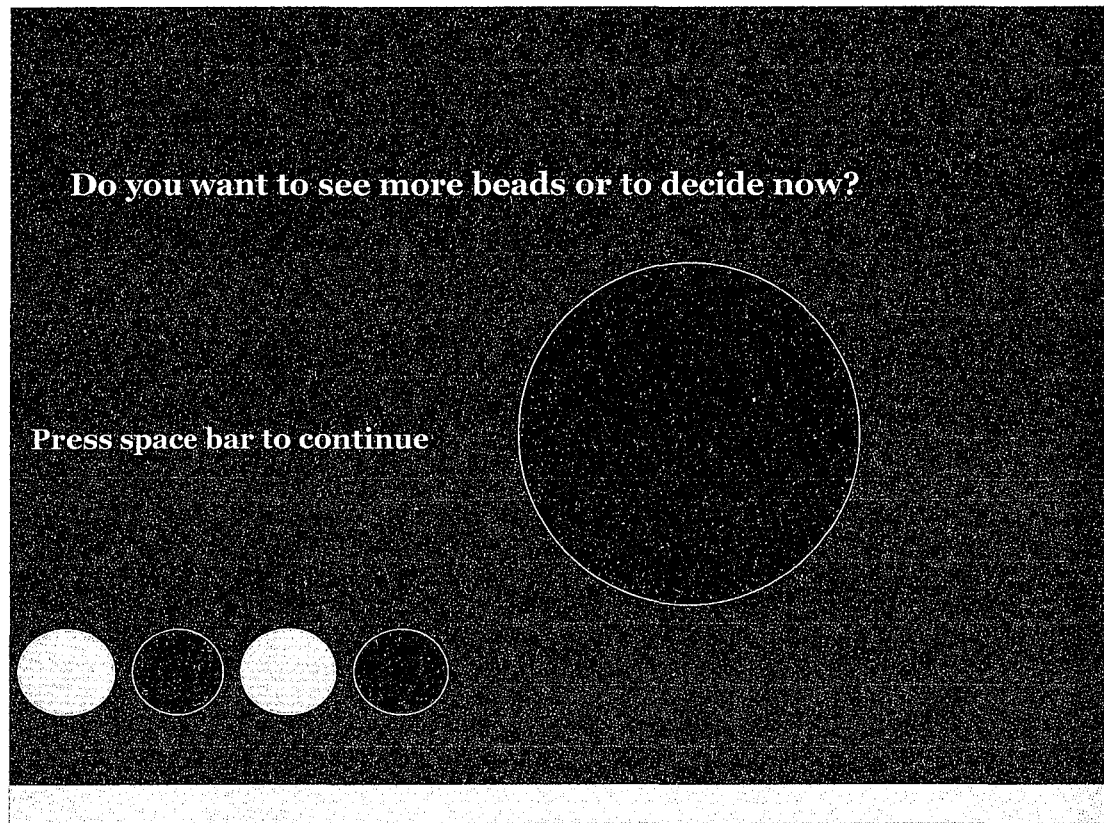
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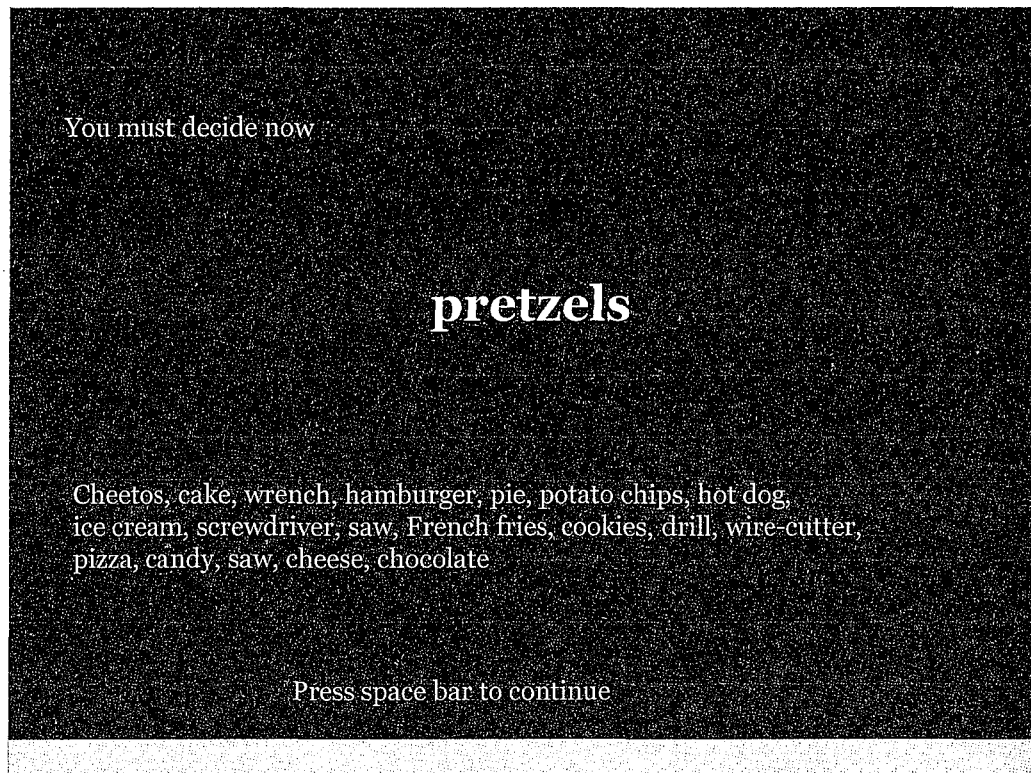
Appendix A: Beads Task



Appendix B: Body Image Survey Task



Appendix C: Food Survey Task



Appendix D: Informed Consent

Student Investigator: Heather A. Sperry, Department of Psychology; Butler University; 4600 Sunset Ave.; Indianapolis, IN 46208; 574-274-8134; hsperry@butler.edu

Principal Investigator: Joel M. Martin, Ph.D.; Department of Psychology; Butler University; 4600 Sunset Ave.; Indianapolis, IN 46208; 317-940-9971; jmmarti1@butler.edu

You are being asked to participate in a research study as one of approximately 100 participants. In order to decide whether or not you wish to participate, you need to understand enough of the procedure, risks, and benefits to make an informed decision. Please read this form carefully and feel free to ask the researcher any questions you have.

Purpose of Study. I would like you to participate in this study about the way people reason and make decisions.

Procedures. After signing this informed consent, you will be asked to complete a few tasks. You will be asked to supply some information about yourself and to complete a few questionnaires. I anticipate that your participation will take approximately 45 minutes.

Risks and Benefits. Research studies often involve some risk. The risks of this study are thought to be minimal. You may experience some discomfort disclosing personal information. To minimize this risk: (1) your name will not be associated with the information you provide, rather, your information will be linked only to a randomly assigned code number; (2) you may contact the principal investigator (Dr. Joel M. Martin) at 317-940-9971 if you have concerns; (3) the Butler University Counseling and Consultation Services can be reached at 317- 940-9385 and is located at the Health and Recreation Center in room 120. I anticipate no direct benefits for your participation, but you may receive the benefit of contributing to our understanding about people's decision making process.

Your participation in the project is completely voluntary. You do not have to participate in this study. Your decision about participation in this project will have no effect on your standing at Butler University. You can also withdraw from the study at any time without penalty.

Confidentiality. All information collected as part of this study will be confidential to the extent allowed by law. The information will be used for purposes of scientific publication and presentation. Your identity will not be revealed in any publication or oral presentation of the results in this research. I will take the following steps to ensure your confidentiality: (1) Participants in this study will be randomly assigned a code number. That number will be the only identifying information on questionnaires. (2) All study data will be kept in a locked cabinet or in a password-protected electronic data file. (3) In reporting data from the study no names will be used and information will be reported as group averages. The results of this study are expected to be published in a professional psychology journal at a later date and are also expected to be utilized for presentation at conferences. You may request to receive a copy of the results of this study when they are available by contacting Dr. Joel Martin at 317-940-9971.

Who to contact with questions? Questions can be directed to the research who meets with you or Dr. Joel Martin at 317-940-9971. By signing this form you are stating that you have read this form and have had an opportunity to ask questions about the research project. You are agreeing to participate in this study based on the information presented to you. You may choose to withdraw at any time without penalty.

I agree to take part in this study.

Participant's Printed Name

Participant's Signature

Date

Researcher's Signature

Date

ID # _____

Appendix E: Goldfarb Fear of Fat Scale

Please read each of the following statements and select the number which best represents your feelings and beliefs.

1	2	3	4
Very Untrue	Somewhat Untrue	Somewhat True	Very True
___ 1.			
___ 2.			
___ 3.			
___ 4.			
___ 5.			
___ 6.			
___ 7.			
___ 8.			
___ 9.			
___ 10.			

Please indicate on the line at left the answer which applies best to each of the numbered statements. All of the results will be *strictly* confidential. Most of the questions directly relate to food or eating, although other types of questions have been included. Please answer each question carefully. Thank you.

	1	2	3	4	5	6
	Always	Very Often	Often	Sometimes	Rarely	Never
___ 19.	Enjoy eating meat.					
___ 20.	Wake up early in the morning.					
___ 21.	Eat the same foods day after day.					
___ 22.	Think about burning my calories when I exercise.					
___ 23.	Have regular menstrual periods.					
___ 24.	Other people think that I am too thin.					
___ 25.	Am preoccupied with the thought of having too much fat on my body.					
___ 26.	Take longer than others to eat my meals.					
___ 27.	Enjoy eating at restaurants.					
___ 28.	Take laxatives.					
___ 29.	Avoid foods with sugar in them.					
___ 30.	Eat diet foods.					
___ 31.	Feel that food controls my life.					
___ 32.	Display self-control around food.					
___ 33.	Feel that others pressure me to eat.					
___ 34.	Give too much time and thought to food.					
___ 35.	Suffer from constipation.					
___ 36.	Feel uncomfortable after eating sweets.					
___ 37.	Engage in dieting behavior.					
___ 38.	Like my stomach to be empty.					
___ 39.	Enjoy trying new rich foods.					
___ 40.	Have the impulse to vomit after meals.					

ID # _____

Appendix G: Demographic Questionnaire

Gender: Male _____ Female _____

Age: _____

Marital Status: Single _____ Married _____ Divorced _____ Separated _____
Widowed _____

Race/Ethnic Background: White _____ African American or Black _____
Asian _____ Hispanic or Latino _____
American Indian _____ Other _____

(please specify)

Religion: _____

Are you a full time student? Yes _____ No _____

If no, what is your occupation? _____

Year in college: First year _____ Sophomore _____ Junior _____ Senior _____ Other _____

Major: _____

Have you ever been diagnosed with a psychological disorder? Yes _____ No _____

If yes, please list diagnoses: _____

Are you currently taking any medication for the treatment of any psychological disorder?

Yes _____ No _____